

Appln. No. 10/646,972
Amendment dated March 22, 2006
Reply to Office Action dated September 22, 2005

REMARKS/ARGUMENTS

The foregoing amendments and these remarks are in response to the Office Action, dated September 22, 2005. At the time of the Office Action, claims 1-14 were pending in the present application. Claims 1 and 12-14 were rejected under 35 U.S.C. § 112, ¶1. Claims 1 and 12 were rejected under 35 U.S.C. § 103(a). Claims 2-11 were indicated as being allowed. Each of the rejections will be addressed in turn below.

35 U.S.C. § 112

Applicant will first address the rejection of claims 1 and 12-14 under 35 U.S.C. § 112, ¶2. The Office Action noted that the recitation of "a plurality of full diffuser vanes" is not supported by the specification. Applicant submits that support for the term "a plurality of full diffuser vanes" can be found at least in the drawing figures, which clearly show full diffuser vanes formed on the disc-shaped portion (103). Thus, Applicant respectfully reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, ¶2.

Art-Based Rejections

Turning to the art-based rejections, claims 1 and 12 were rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 5,011,371 to Gottemoller ("Gottemoller") in view of U.S. Patent No. 6,019,927 to Galliger ("Galliger").

The Office Action correctly notes that Gottemoller does not disclose casting using a plaster mold. However, this is not the only deficiency of Gottemoller. For instance, the Office Action notes that "Gottemoller '371 discloses manufacturing vaned diffuser (28; col. 4, line 35) by casting a one piece disc shape portion (30; col. 4, line 36) defining one surface of the diffuser and a plurality of full diffuser vanes (31; col. 4, line 37) extending from the surface." The cited

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passages of Gottemoller do not support the rejection. At col. 4, lines 34-41, Gottemoller refers to a "diffuser 28 comprising a cast body, including a side mounting plate 30 with a plurality of integral machined vanes 31 extending therefrom." (emphasis added). Gottemoller does not contemplate casting the diffuser body and the vanes as one piece; rather, it requires an additional machining step to form the vanes. Therefore, not only does Gottemoller fail to disclose the use of a plaster mold, but it also fails to disclose the step of "casting as one piece a disc-shaped portion (103) ... and a plurality of full diffuser vanes (113)," as recited by claim 1.

The Office Action relies on Galliger to supply the deficiencies of Gottemoller. The Office Action summarily states, without support, that it would have been obvious to one having ordinary skill in the art at the time of the invention to cast the vaned diffuser of Gottemoller in a plaster mold in light of the teachings of Galliger, in order to form the vaned diffuser with precise dimensions and surfaces. At the outset, it is respectfully submitted that Gottemoller is not properly combinable with Galliger. There is no teaching or suggestion in Gottemoller supporting the combination. Moreover, there is no motivation to combine these references.

One skilled in the art would not look to the plaster molding mentioned in Galliger to make a vaned diffuser. The method according to claim 1 is directed to the manufacture of a vaned diffuser. Vaned diffusers include a plurality of vanes of relatively simple geometry, as can be seen in Gottemoller. In contrast, Galliger is directed to making an entirely different component – an impeller – which has a plurality vanes with a very complex geometry. In the case of such complex vanes, machining the vanes is not feasible because the process is difficult and very expensive, so plaster molding is used instead, which yields the desired quality and finish while avoiding costly machining.

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Application of plaster casting in Galliger to the manufacture of the vaned diffuser in Gottemoller is contrary to the teachings in the art. Use of a plaster mold would appreciably increase the cost of the casting process in Gottemoller. One skilled in the art would not consider plaster casting of a vaned diffuser with such relatively simple vane geometry to be economical. Instead, one skilled in the art would be inclined to machine the vanes, which is common in the art as expressly recognized by Gottemoller. Therefore, the application of plaster mold casting in Galliger to cast the vaned diffuser of Gottemoller would not be readily apparent to one skilled in the art.

The method according to aspects of the invention involves a casting process in a plaster mold to produce a diffuser with vanes at their net size and shape. There is no need to subsequently machine the aerodynamic wetted surfaces of the vane. However, it has been discovered that the increased cost of casting using a plaster mold is more than offset by the savings enjoyed by eliminating the need for subsequent machining of the aerodynamically wetted surfaces of the vane, leading to an overall reduction in cost. These benefits are not appreciated by the prior art.

Lastly, Applicant notes that, even if Gottemoller and Galliger can be combined, the invention of claim 1 can only be arrived at by selectively picking and choosing of portions of Gottemoller and Galliger with the aid of hindsight. Further, Gottemoller only mentions casting the side mounting plate. Thus, even if the casting process of Gottemoller is done in a plaster mold, it still does not take away from the fact that Gottemoller only teaches forming the vanes by machining. Thus, the combination of Gottemoller and Galliger fails to disclose each and every element of the invention recited in claim 1.

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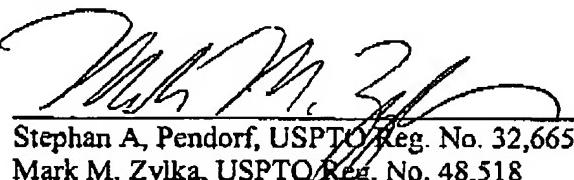
In light of the above, it is respectfully submitted that claim 1 distinguishes over the cited art and that the obviousness rejection has been overcome. Therefore, claims 12-14, which depend from claim 1, are necessarily distinguishable over Gottemoller and Galliger at least for the reasons presented above in connection with claim 1.

Conclusion

In light of the foregoing, Applicant respectfully submits that the Examiner's rejections have been overcome. Applicant respectfully requests reconsideration and withdrawal of the rejections of claims 1 and 12-14 and allowance pending claims 1-14. A notice to that effect is respectfully requested.

Respectfully submitted,

Date: 3/22/2006



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